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(54) **Door trims**

(57) A trim for a door stile 10 comprises two generally L-section mild steel strips 12 flanking an intumescent strip 28 fitted with a brush-type smoke seal 34. A further intumescent strip 24 is located between the end face of the stile 10 and each strip 12 which is fitted by first locating the lip 22 and then snapping the flange 15 into a previously cut slot 36.

The trims protect the edges and minor faces of door against impact damage.

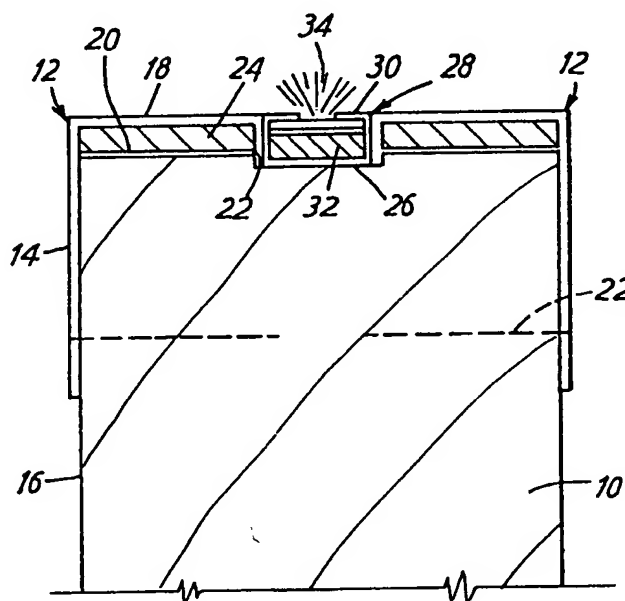
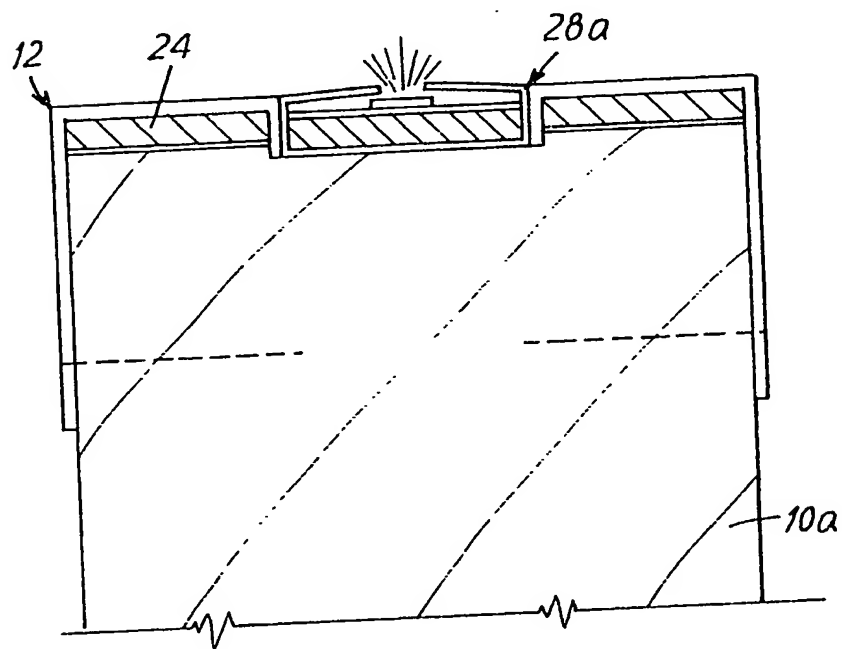
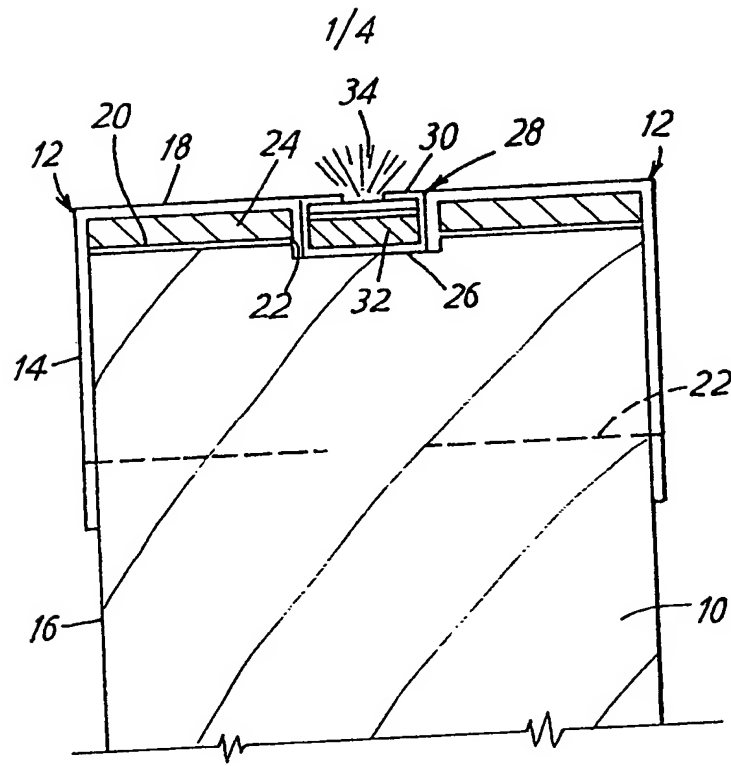


FIG. 1

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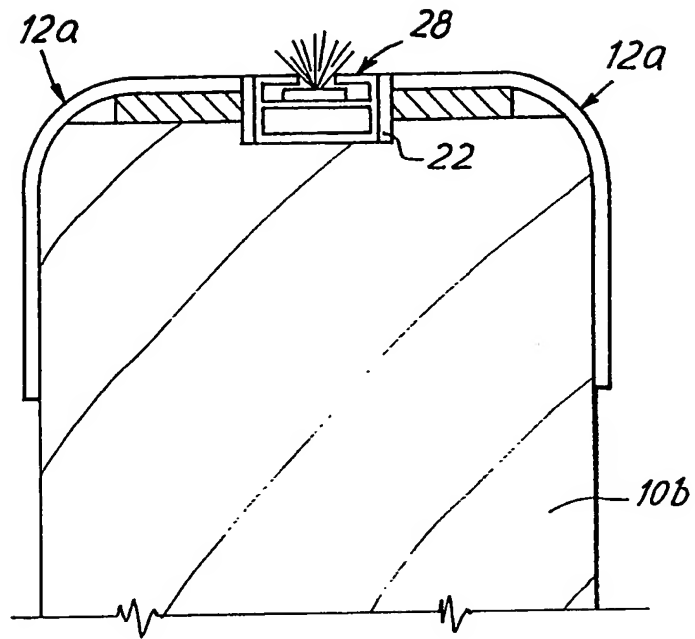


FIG. 3

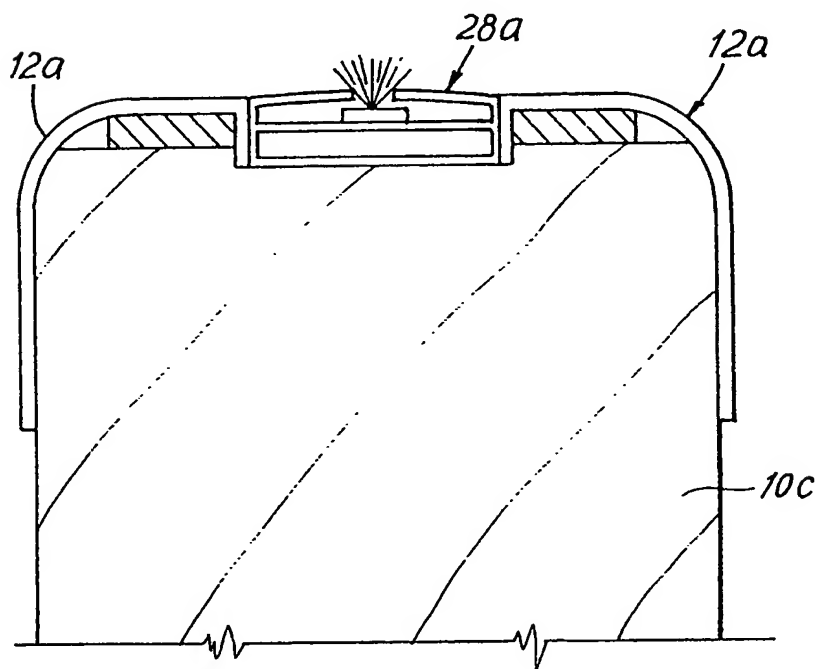


FIG. 4

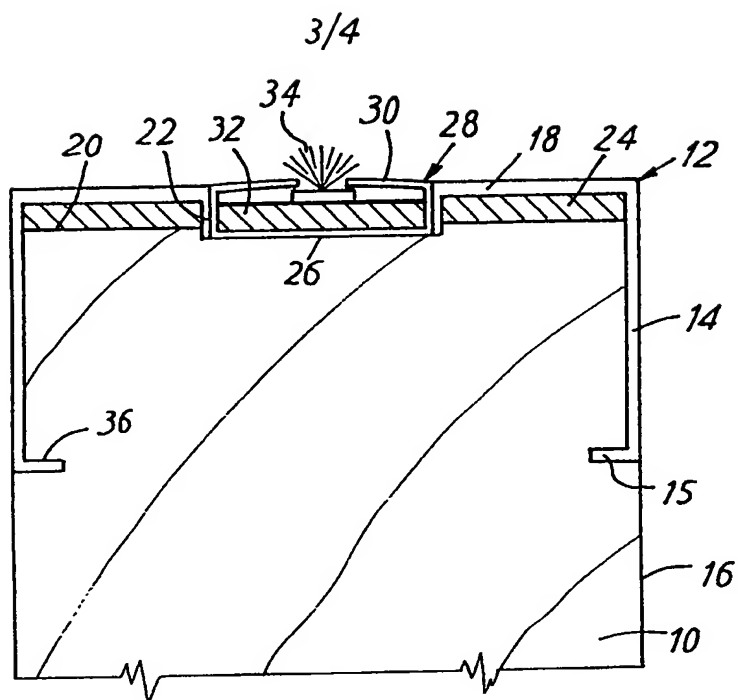


FIG. 5

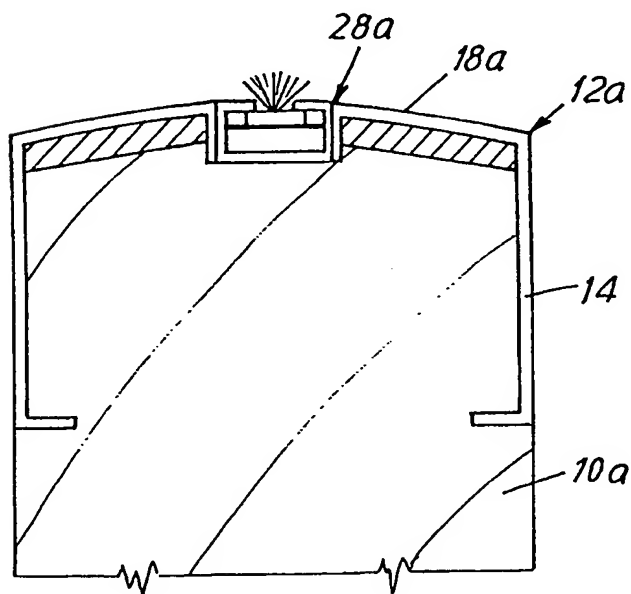
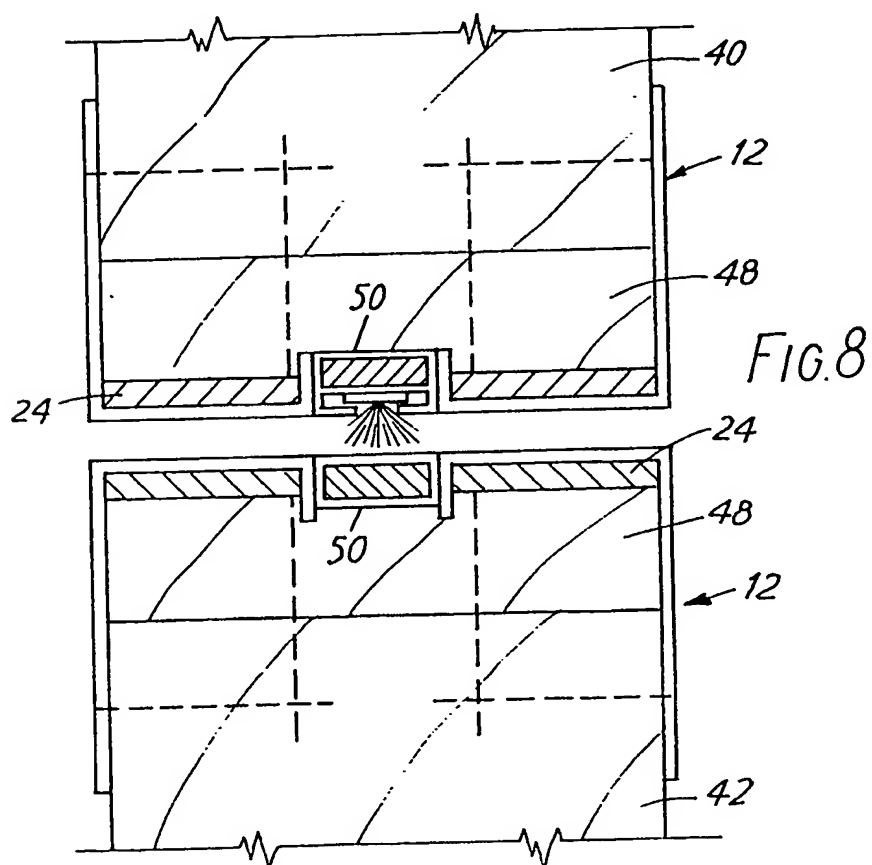
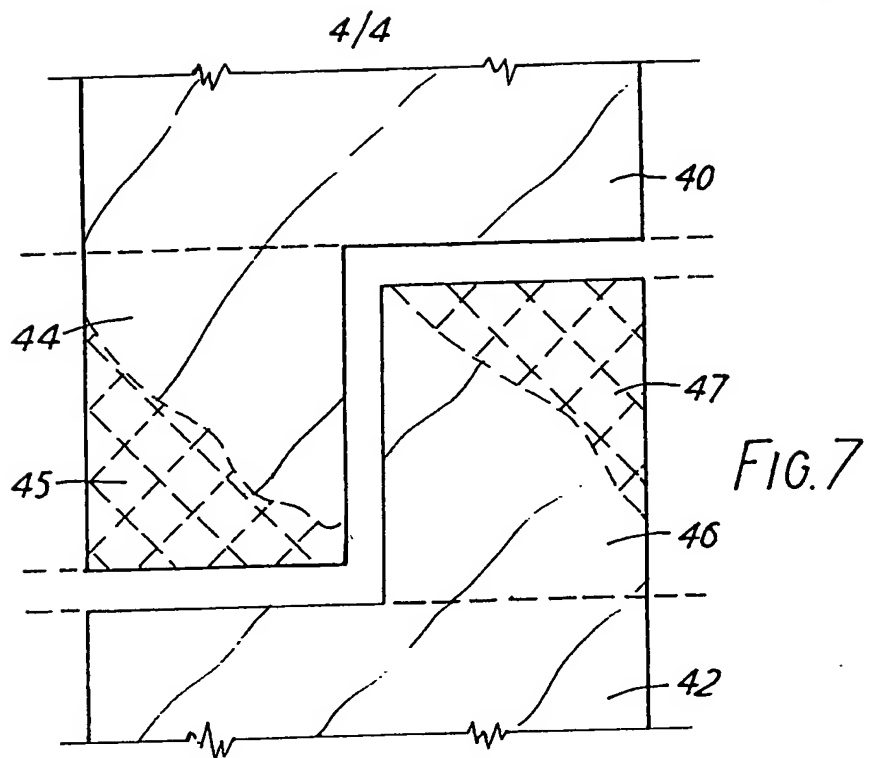


FIG. 6

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SPECIFICATION

Door trims

- 5 This invention relates to door trims for protecting the edges and minor faces of a door against impact damage and capable of forming an actual or potential seal between the door and another door or the jamb of a surrounding frame. A trim according to the present invention may be fitted to the swinging side of a hinged door (or the corresponding closing side of a sliding door). However, not only do stiles on the leading sides of doors suffer considerable wear and damage but so also do hinged or pivoted stiles, particularly on those doors which swing about an axis inset from the side face of the stile, thus having when open a butt portion projecting from the plane of the frame. Clearly the wear and damage suffered by the butt portion is increased if the doors are normally kept open by an electromagnetic catch which is released only in an emergency. Trims according to the present invention find application in protecting such hinged or pivoted stiles, and indeed also the top and bottom edges of a door, and are applicable to both flush and panelled doors.
- 30 Doors in buildings such as hospitals, homes for the disabled, sheltered housing, airports and factories are not only subject to heavy traffic but the edges of the swinging side tend to suffer from the impact of vehicles such as wheel chairs, trolleys, fork lift trucks, barrows and baggage handling trucks. Where the door is a fire-resistant or fire-check door the attrition of the edges not only mars the appearance of the door but also impairs its performance in resisting or checking the spread of fire.
- By the use of a trim according to the present invention a door may be easily repaired that formerly could be repaired only with difficulty or had to be replaced. Where the door has a rebated stile the trim affords the opportunity to convert it to a square profile stile. If, in further use, the trim becomes damaged or unsightly it may easily be replaced. The trim may also be fitted to new doors to prevent impact damage to the door and provide the sealing function.
- According to the present invention there is provided a door trim for fitting to a minor face of a door, the trim comprising one or more protective strips intended to overlie the face of the door and the adjacent marginal edge portions of the major faces, and an elongate seal.
- 60 Although the seal may be fitted to the door frame opposite the protective strip it is preferably fitted to the door: in the latter case the seal may be secured in a recess formed in a one-piece protective strip or the strip may be secured directly to the side face of the door

between two protective strips.

- 70 The seal may be a smoke seal; a fire seal, which is preferably an intumescent strip, but may be formed from mastic or putty; or a combination thereof. Alternatively the seal may be a weather seal or an acoustic seal.
- The protective strip may be formed of a variety of materials, for example brass, aluminium, stainless steel, bronze, rubber or timber; a non-metallic inorganic material such as calcium silicate; a plastics material such as PVC or polypropylene; or suitable combinations thereof. A preferred material is mild steel, which may be galvanised, because of its high impact strength, ready availability including the PVC-coated forms giving a wood grain or coloured finish, and its ability to be easily worked with conventional equipment.
- 80 Screwing or pinning are common methods of securing the trim to the door. In some circumstances it may be advantageous to use a combination of these methods or to employ concealed fixing means such as adhesive, which may be applied at the time of fixing the trim or be previously coated on the trim and protected by a removable cover strip; slides; or snap fasteners. A further form of fixing, which is both simple and effective, may be provided by forming the trim itself as a snap-on fixing. This may be done by providing the edge of the trim overlying the face of the door with a lip or flange which fits into a groove in the door and, for example, the other edge of the trim adjacent the seal with another lip or flange which cooperates with the side face of a slightly over-size slot made to receive the seal or with a further, specially-cut groove.
- The cross-section of the strip may be L-section for a square-edged door or rounded to fit the less common rounded edge door.
- 105 Particularly when a trim according to the invention is fitted to a new door it is advantageous to rebate the marginal edge portion of the major face of the stile in order to receive the corresponding web of the protective strip and thus maintain a flush surface.
- Preferably, the trim according to the present invention, when used in conjunction with a fire-resistant or fire-check door, additionally comprises a concealed strip of intumescent material located under the trim that will expand when exposed to heat. The primary effect of this intumescent strip is to accommodate irregularities in the edge of the door and ensure that this potential source of weakness is blocked and the fire-resistance integrity of the door maintained. This is important where the trim is likely to buckle under heat. Where the fabric of the door is deficient to a considerable depth one or more additional layers of intumescent strip should be provided. Even when the trim is fitted to a new door or a door whose edge has been made good the intumescent strip still has an important function to fulfil in insulating the body of the door

from the heat transmitted through the protective strip, particularly where this is of a heat-conductive nature. The concealed strip may be pre-formed or made *in situ* from intumescent material in mastic or putty form.

If the chosen concealed intumescent material is one which develops a pressure when heated it can be utilized to force outwards the strip overlying the side face of the door so that the gap between the door and the door frame or an adjacent door is narrowed. The strip should not of course be forced outwards to such an extent that the gap is completely bridged or potentially harmful heat transmission will occur.

Some embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings in which

Figure 1 is a horizontal section through the stile of a door fitted with a trim according to the present invention;

Figures 2 to 6 are similar sections showing modifications of the trim of Fig. 1;

Figure 7 is a horizontal section through damaged portions of the rebated meeting stiles of a pair of doors; and,

Figure 8 is a similar section through the stiles after being fitted with trims according to the present invention.

As shown in Fig. 1 a wooden stile 10 on the swinging side of a fire-check door has a square profile with each edge being covered by an 18 swg mild steel angle edging 12. Each edging 12 comprises a web 14 which overlies a major face 16 of the stile 10, a web 18 which overlies part of the side face 20 of the stile 10 and, at the outer edge of web 16, a small return lip 22. Each edging 12 is faced on the outside with wood-grain effect PVC and is secured by screws or pins (not shown) passing through holes drilled along the line 22.

Between each web 18 and the side face 20 there is concealed an intumescent fire and smoke seal 24, and at the centre of the side face 20 there is formed a shallow channel 26 which receives the edges of the lips 22 and has adhesively secured to the floor thereof a fire and smoke sealing strip 28 comprising a plastics extrusion 30 containing an intumescent strip 32 and mounting a brush-type smoke seal 34.

Before fitting the above-described cover strip it is necessary to plane a small amount off the side face 20 to accommodate the thickness of the concealed strips 24, and also of course to form the channel 26. Where the damage to the edge of the stile 10 is deep one or more additional thicknesses of strip should be secured in that area after suitably squaring off.

On the outbreak of fire the edging 12 exposed to the fire will transmit heat to the respective concealed intumescent strip 24

which will expand to fill recesses in the damaged stile 10 thus forming a seal between it and the edging 12; the expansion of the strip 24 will also have the effect of the pushing the web 18 outwards thus narrowing the gap between the stile 10 and door frame or cooperating door. During the expansion of the strip 24 moisture is emitted, cooling the adjacent stile 10 and the edging 12 thus reducing any tendency for it to buckle or distort and the consequent need for compensation by the intumescent material.

The heat of the fire is also transmitted by the respective edging 12 to the central strip 28 which will also expand to seal the gap between the stile 20 and the adjacent joints or door edge. Because of the gap between the two edgings 12 heat is not directly transmitted to the unexposed edging 12, thus reducing the possibility of ignition of stile 10 on its unexposed face.

The embodiment of Fig. 2 differs from that of Fig. 1 only in that the stile 10a is wider than the stile 10 and that a wider strip 28a of slightly modified form is mounted in the central position between the two edgings 12.

In the embodiment of Fig. 3 the stile 10b has rounded edges and the edgings 12a are of correspondingly rounded form.

The embodiment of Fig. 4 differs from that of Fig. 3 only in having a thicker stile 10c and consequently employing the wider strip 28a in a manner analogous to that of Fig. 2.

In the embodiment of Fig. 5 the edging 12 additionally comprises, at the outer edge of the web 14, a flange 15.

Before fitting the cover strip of Fig. 5 it is necessary to cut a slot 36 to receive the flange 15, to rebate the major face of the stile 16 at 38 to receive the web 14, and to form the channel 26; it is also usually necessary to plane a small amount off the side face 20 to accommodate the thickness of the concealed strips 24. Where the damage to the edge of the stile 10 is deep one or more additional thicknesses of strip should be secured in that area after suitably squaring off.

To fit the cover strip the flange 15 is first pressed or gently driven into the slot 36 and the web 18 then urged inwardly until the lip 22 snaps over the side face of the channel 26.

The embodiment of Fig. 6 differs from that of Fig. 5 in that the stile 10a is one of a pair of meeting stiles having rounded edges and the webs 18a are of correspondingly rounded form and at an obtuse angle to the respective webs 14; moreover the stile 10a is narrower than the stile 10 and a narrower strip 28a of slightly modified form is mounted in the central position between the two edgings 12a.

In Fig. 7 there is shown a pair meeting stiles 40, 42 having stops 44, 46 with damaged areas 45, 47 respectively. To fit a trim according to the present invention (see Fig. 8)

the stops 44, 46 are sawn off and a hardwood lipping 48 having a central channel 50 is secured to each stile 40, 42, thus converting the stiles to square-profile type. The thickness of the lipping 48 is chosen so as to leave a gap between the two doors which is bridged by the smoke seal strip 34.

It will be appreciated that in its final form the embodiment of Fig. 8 essentially consists of a pair of trims of the form shown in Fig. 1 with the exception that a simple intumescent strip 52 without a brush seal is fitted to the stile 42.

Although in all the above-described embodiments the central intumescent seal is located in a channel, this feature is not essential and by suitable selection of the dimensions of the edging and of strip thickness, the trim according to the invention can be fitted to a door having a flush swinging or closing side. Moreover both the central and concealed seals may be formed of any suitable type of sealant, e.g. mastic or putty. It will be appreciated that the trim according to the present invention not only provides a simple, practicable and economical means of renovating existing fire-resistant or fire-check doors or ordinary flush doors but that it can also be fitted to new doors to prevent damage to the door itself.

CLAIMS

1. A door trim for protecting the edges and minor faces of a door, the trim comprising one or more protective strips which, when fitted, overlie a minor face of the door and the adjacent marginal edge portions of the major faces, and an elongate seal.

2. A trim as claimed in Claim 1, in which the seal is arranged to be fitted to said minor face of the door.

3. A trim as claimed in Claim 2 and having a single protective strip formed with a recess in which the seal is received.

4. A trim as claimed in Claim 2 and having two protective strips which, when fitted, flank the seal and allow the seal to be secured directly to said minor face.

5. A trim as claimed in Claim 4, in which a web portion of each strip intended to overlie said minor face of the door is provided with an intumed lip or flange which, when fitted, engages a side face of a recess in which the base of the seal is received.

6. A trim as claimed in any preceding claim, in which the elongate seal comprises a fire seal.

7. A trim as claimed in Claim 6, in which the fire seal is an intumescent strip.

8. A trim as claimed in Claim 6 or 7, in which the elongate seal comprises a smoke seal.

9. A trim as claimed in any preceding claim, in which the, or each, protective strip is formed of mild steel.

10. A trim as claimed in Claim 9, in

which the steel is galvanised.

11. A trim as claimed in any preceding claim, in which the, or each, protective strip is PVC coated.

12. A trim as claimed in any preceding claim and additionally comprising two strips of intumescent material intended to be located, when the trim is fitted, beneath the protective strip, one on each side of the elongate seal.

13. A trim as claimed in Claim 12, in which the intumescent material is of the type capable of developing a pressure when heated so as to force the overlying strip outwards.

14. A trim as claimed in any preceding claim, in which the, or each, protective strip is apertured to facilitate fixing by pins or screws.

15. A trim as claimed in any preceding claim, in which the, or each, protective strip is provided with concealed fixing means.

16. A trim as claimed in any preceding claim, in which the outer edges of webs of the protective strip or strips intended to overlie the major faces of the door are provided with an internal lip or flange which is receivable in a corresponding slot in the door so as to form a snap fixing.

17. A door trim as claimed in Claim 1 and substantially as herein described.

18. A door trim substantially as herein described with reference to any one of Figs. 1 to 7 of the accompanying drawings.

19. A door fitted with a trim as claimed in any preceding claim.

20. A method of converting a rebated door stile to a square-profile stile comprising removing the stop, adding lipping if necessary, and fitting a trim as claimed in any one of Claims 1 to 18.

21. The features as herein disclosed, or their equivalents, in any patentably novel selection.

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